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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,897	03/31/2004	James Naden	920476-95824	7609

23644 7590 05/16/2008  
BARNES & THORNBURG LLP  
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CHICAGO, IL 60690-2786

EXAMINER
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WENDELL, ANDREW

ART UNIT	PAPER NUMBER
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2618

NOTIFICATION DATE	DELIVERY MODE
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05/16/2008

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/814,897  
Filing Date: March 31, 2004  
Appellant(s): NADEN ET AL.

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William M. Lee, Jr

For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 2/18/2008.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,612,948	Fette et al.	3-1997
6,330,458	Lamoureux et al.	12-2001
4,670,899	Brody et al.	6-1987

6,775,251	Wiedeman et al.	8-2004
6,934,511	Lovinggood et al.	8-2005
US Pat Pub# 2003/0195017	Chen et al.	10-2003
US Pat Pub# 2005/0143084	Cheng et al.	6-2005

### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6, 10-12, 15-25, 27, 31-33, and 36-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Fette et al. (US Pat# 5,612,948).

Regarding claim 1, Fette et al. high bandwidth communication network teaches a control entity 24 (Fig. 2 and Fig. 3) for a wireless communications system which comprises a plurality of base stations 12 (Fig. 1), each base station defining a plurality of beams (Col. 3 lines 62-64) which each have an amount of resources for supporting communication links with terminals 16 or 16' (Fig. 1) located in the beams, and a relaying equipment 16 (Fig. 1), wherein the control entity is arranged to determine if a direct communication link can be supported between a new terminal and a base station using a first beam (Col. 3 lines 41-57 and Col. 4 lines 22-34) and, if the direct communication link cannot be supported, to invoke use of the relaying equipment to

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provide a first communication link between a base station and the relaying equipment using the resources of a second beam (Col. 3 lines 41-57 and Col. 4 lines 22-34) and a second communication link between the relaying equipment and the terminal whereby to provide a multi-hop path between the base station and the terminal (Col. 3 lines 41-57 and Col. 4 lines 22-65).

Regarding claim 2, Fette et al. teaches wherein the first beam and the second beam are defined by the same base station (Fig. 1, Col. 3 lines 41-57, and Col. 4 lines 22-65).

Regarding claim 3, Fette et al. teaches wherein the first beam and the second beam are separated by at least one intermediate beam of the base station (Col. 3 lines 21-57). Does not limit the repeater units that can be used and could be separated by at least one beam or more.

Regarding claim 6, Fette et al. teaches a control entity arranged to determine if the first beam has sufficient resources to support a direct communication link with the new terminal (Col. 4 lines 22-65).

Regarding claim 10, Fette et al. teaches wherein there are a plurality of relaying equipments positioned within the beams and the control entity is further arranged to select a relaying equipment, from a plurality of candidate relaying equipments, to provide the multi-hop path (Col. 4 lines 35-48).

Regarding claim 11, Fette et al. teaches wherein the control entity is arranged to select a relaying equipment on the basis of the quality of the first communication link that the relaying equipment can provide (Col. 4 lines 35-65).

Regarding claim 12, Fette et al. teaches wherein the control entity is arranged to select a relaying equipment on the basis of the quality of the second communication link that the relaying equipment can provide (Col. 4 lines 35-65).

Regarding claim 15, Fette et al. teaches wherein the second communication link uses the resources of the first beam (Col. 3 lines 41-57 and Col. 4 lines 22-65).

Regarding claim 16, Fette et al. teaches wherein the second communication link uses the resources of the second (Col. 3 lines 41-57 and Col. 4 lines 22-65).

Regarding claim 17, Fette et al. teaches wherein the second communication link uses resources which are separate from those allocated to each beam for direct communication with terminals (Col. 3 lines 41-57 and Col. 4 lines 22-65).

Regarding claim 18, Fette et al. teaches a control entity which is part of the base station (Col. 2 line 52-53).

Regarding claim 19, Fette et al. teaches a control entity which is part of the terminals 16 or 16' (Fig. 1) or relaying equipment 16 (Fig. 1).

Regarding claim 20, Fette et al. teaches a base station 12 (Fig. 1) for a wireless communications system 10 (Fig. 1) including a control entity 24 (Fig. 2 and Fig. 3).

Regarding claim 21, Fette et al. teaches a base station 12 (Fig. 1) for a wireless communications system 10 (Fig. 1) including a control entity 24 (Fig. 2 and Fig. 3).

Regarding claim 22, Fette et al. teaches a base station 12 (Fig. 1) for a wireless communications system 10 (Fig. 1) including a control entity 24 (Fig. 2 and Fig. 3).

Regarding claim 23, method claim 23 is rejected for the same reason as apparatus claim 1 since the recited elements would perform the claimed steps.

Regarding claim 24, method claim 24 is rejected for the same reason as apparatus claim 2 since the recited elements would perform the claimed steps.

Regarding claim 25, method claim 25 is rejected for the same reason as apparatus claim 3 since the recited elements would perform the claimed steps.

Regarding claim 27, method claim 27 is rejected for the same reason as apparatus claim 6 since the recited elements would perform the claimed steps.

Regarding claim 31, method claim 31 is rejected for the same reason as apparatus claim 10 since the recited elements would perform the claimed steps.

Regarding claim 32, method claim 32 is rejected for the same reason as apparatus claim 11 since the recited elements would perform the claimed steps.

Regarding claim 33, method claim 33 is rejected for the same reason as apparatus claim 12 since the recited elements would perform the claimed steps.

Regarding claim 36, method claim 36 is rejected for the same reason as apparatus claim 15 since the recited elements would perform the claimed steps.

Regarding claim 37, method claim 37 is rejected for the same reason as apparatus claim 16 since the recited elements would perform the claimed steps.

Regarding claim 38, method claim 38 is rejected for the same reason as apparatus claim 17 since the recited elements would perform the claimed steps.

Regarding claim 39, computer program claim 39 is rejected for the same reason as apparatus claim 1 since the recited elements would perform the claimed steps.

Regarding claim 40, apparatus claim 40 is rejected for the same reason as apparatus claim 1 since the recited elements would perform the claimed steps.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fette et al. (US Pat# 5,612,948) in view of Lamoureux et al. (US Pat# 6,330,458).

Regarding claim 4, Fette et al. high bandwidth communication network teaches the limitations in claim 1. Fette et al. fails to teach a beam narrower than the width of the sectors.

Lamoureux et al. intelligent antenna sub-sector switching for time slotted systems teaches wherein the base station defines a plurality of sectors and the beams have a width which is narrower than the width of the sectors (Col. 2 lines 30-39).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate a beam narrower than the width of the sectors as taught by Lamoureux et al. into Fette et al. high bandwidth communication network in order to improve signals errors and discontinuity in the signals (Col. 2 lines 49-64).

5. Claims 5 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fette et al. (US Pat# 5,612,948) in view of Chen (US Pat Appl# 2003/0195017).

Regarding claim 5, Fette et al. high bandwidth communication network teaches the limitations in claim 1. In Fette et al. system the beam should be adapted to a



repeater in order for communication to occur, but that is not stated. Fette et al. fails to teach adapting the beam shape.

Chen et al. wireless communication system with base station beam sweeping teaches a control entity arranged to adapt the shape of the second beam to serve a communication point (Abstract, Sections 0017-0021).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate adapting the beam shape as taught by Chen et al. into Fette et al. high bandwidth communication network in order to decrease mutual interference between elements in the system (Section 0016).

Regarding claim 26, method claim 26 is rejected for the same reason as apparatus claim 5 since the recited elements would perform the claimed steps.

6. Claims 7-8, 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fette et al. (US Pat# 5,612,948) in view of Brody et al. (US Pat# 4,670,899).

Regarding claim 7, Fette et al. high bandwidth communication network teaches the limitations in claims 1 and 6. Fette et al. fails to teach determining the quality of communication in other terminals.

Brody et al. load balancing for cellular radiotelephone system teaches determining if the first beam has sufficient resources to support a direct communication link without reducing quality of communication for existing terminals served by the first beam below a predetermined limit (Col. 7 lines 4-49).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate determining the quality of communication in other terminals as taught by Brody et al. into Fette et al. high bandwidth communication network in order to improve system performance and reduce block calls (Col. 6 line 59-Col. 7 line 3).

Regarding claim 8, the combination including Brody et al. teaches determining an amount of resources required to support the direct communication link between the new terminal and the base station, to determine a reduced amount of resources available to existing terminals served by the first beam if the base station were to accept the new terminal, and a quality of communication resulting from the reduced amount of resources (Col. 7 lines 4-49).

Regarding claim 28, method claim 28 is rejected for the same reason as apparatus claim 7 since the recited elements would perform the claimed steps.

Regarding claim 29, method claim 29 is rejected for the same reason as apparatus claim 8 since the recited elements would perform the claimed steps.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fette et al. (US Pat# 5,612,948) in view of Brody et al. (US Pat# 4,670,899) as applied to claims 1, 6, and 7 above, and further in view of Cheng et al. (US Pat Appl# 2005/0143084).

Regarding claim 9, Fette et al. high bandwidth communication network in view of Brody et al. load balancing for cellular radiotelephone system teaches the limitations in claims 1, 6, and 7. Fette et al. and Brody et al. fail to teach an equal throughput scheduling.

Cheng et al. network controlled channel information reporting teaches wherein the base station uses equal throughput scheduling (Section 0014).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate an equal throughput scheduling as taught by Cheng et al. into determining the quality of communication in other terminals as taught by Fette et al. in view of Brody et al. high bandwidth communication network in order to improve system performance (Section 0002).

8. Claims 13 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fette et al. (US Pat# 5,612,948) in view of Wiedeman et al. (US Pat# 6,775,251).

Regarding claim 13, Fette et al. high bandwidth communication network teaches the limitations in claims 1 and 10. Fette et al. fails to teach selecting a relay base on distance.

Wiedeman et al. satellite communication system providing multi-gateway diversity and improved satellite loading teaches wherein the control entity is arranged to select a relaying equipment on the basis of distance between the relaying equipment (satellite) and the new terminal (Col. 6 lines 44-53).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate selecting a relay base on distance as taught by Wiedeman et al. into Fette et al. high bandwidth communication network in order to provide additional criteria to base an assignment of a new communication satellite(s) (Col. 3 lines 8-18).

Regarding claim 34, method claim 34 is rejected for the same reason as apparatus claim 13 since the recited elements would perform the claimed steps.

9. Claims 14 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fette et al. (US Pat# 5,612,948) in view of Lovinggood et al. (US Pat# 6,934,511).

Regarding claim 14, Fette et al. high bandwidth communication network teaches the limitations in claims 1 and 10. Fette et al. fails to teach selecting a relay based on a beam.

Lovinggood et al. integrated repeater teaches wherein the control entity selects a relaying equipment in order to compensate for the shape of the beams (Col. 5 lines 52-65).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate selecting a relay based on a beam as taught by Lovinggood et al. into Fette et al. high bandwidth communication network in order to reduce costs (Col. 2 lines 7-16).

Regarding claim 35, method claim 35 is rejected for the same reason as apparatus claim 14 since the recited elements would perform the claimed steps.

10. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fette et al. (US Pat# 5,612,948) in view of Cheng et al. (US Pat Appl# 2005/0143084).

Regarding claim 30, Fette et al. high bandwidth communication network and method teaches the limitations in claims 23 and 27. Fette et al. fail to teach an equal throughput scheduling.

Cheng et al. network controlled channel information reporting teaches wherein the base station uses equal throughput scheduling (Section 0014).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate an equal throughput scheduling as taught by Cheng et al. into Fette et al. high bandwidth communication network and method in order to improve system performance (Section 0002).

**(10) Response to Argument**

1. Appellant's arguments with respect to claims 1-3, 6, 10-12, 15-25, 27, 31, 31-33, and 36-40 have been fully considered but they are not persuasive.

**(A)** The appellant argued that Fette et al. reference does not show "a first communication link between a base station and the relaying equipment using the resources of a second beam."

**In response to the argument (A)**, the examiner respectfully disagrees with the appellant's argument. The examiner will further go into more detail on how the Fette reference reads on the claim. The claim reads, "wherein the control entity is arranged to determine if a direct communication link (from base station 12 to terminal 16 of Fig. 1) can be supported between a new terminal 16 (Fig. 1) and a base station 12 (Fig. 1) using a first beam (the original beam to connect the base station to the terminal directly) and, if the direct communication link cannot be supported 18 (Fig. 1), to invoke use of the relaying equipment 16' (Fig. 1) to provide a first communication link (from the base station to the relay equipment) between a base station and the relaying equipment using the resources of a second beam (from the base station 12 to the relay equipment

16' of Fig. 1 being the second beam) and a second communication link between the relaying equipment 16' (Fig. 1) and the terminal 16 (Fig. 1) whereby the terminal whereby to provide a multi-hop path (from base station 12 (Fig. 1) to relay equipment 16' (Fig. 1) being first path and the relay equipment 16' (Fig. 1) to the terminal 16 (Fig. 1) being the second path) between the base station and the terminal (Col. 3 lines 41-57 and Col. 4 lines 22-34).” Given the broadest reasonable interpretation of appellant’s claims, Fette clearly teach the limitations.

**(B)** The appellant further argues “This passage of Fette [see paragraph 5 of section (vii) Argument] clearly shows that the same resources (time slots 48) of the same beam defined by the base node are used irrespective of whether a base node communicates directly, or indirectly, with a subscriber node.”

**In response to the argument (B)**, the examiner respectfully disagrees with the appellant argument.

Examiner believes appellant is reading more into their claims than is present. There is no mention if the resources are the same or not in the appellant’s claim. Also, appellant’s claim does not mention how the resources are related to the first beam. The claim just simply states “using resources of a second beam and a second communication link.” The first beam, as stated by examiner in argument (A), is the original beam to connect the base station 12 (Fig. 1) to the terminal 16 (Fig.1) directly. The second beam, as stated by examiner in argument (A), is from the base station 12 (Fig. 1) to the relay equipment 16' (Fig. 1). The time slots 48 have nothing to do with

the beam/link being the same because there are two different beams/links [direct (to terminal directly) beam/link and second (to relay equipment) beam/link].

For the sake of argument, column 7 lines 3-17 of Fette points out that Fette does not teach the same resources. It points out that there are multiple channels that do not use the same resources. Also, the appellant points out there are multiple slots “time slots 48” which identifies with multiple channels with different resources. Lastly, column 4 lines 49-51 of Fette points out different resources being used.

**(C)** The appellant further argues “Fette gives no further instruction of how the “antenna beams projected in different directions” would be used....Fette fails to teach the use of the “diverse beams” in this matter.....Indeed, the term “spatial diversity” is normally understood to mean beams which are diverse in terms of space but which otherwise use the same resources (e.g. frequency bearers, time slots on a bearer).”

**In response to the argument (C)**, the examiner respectfully disagrees with the appellant argument. Again, examiner believes the appellant is reading more into their claims than is present. The passage cited column 3 lines 62-64 of Fette was used to further prove multiple beams being used. Examiner has already responded to this argument in response to arguments (A) and (B). Again, given the broadest reasonable interpretation of appellant’s claims, Fette clearly teach the limitations.

2. Appellant’s arguments with respect to claims 4-5, 7-9, 13-14, 26, 28-30, and 34-35 have been fully considered but they are not persuasive.

(D) The appellant further argues "As all of the Examiner's obviousness rejections are also based on this incorrect interpretation of Fette, the obviousness rejections fall away for the same reasons."

**In response to the argument (D)**, the examiner respectfully disagrees with the appellant argument. See the above responses (A-C).

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Andrew Wendell/

Examiner, Art Unit 2618

May 6, 2008

Conferees:

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